All the proceedings of the Congress have been conducted in French, and it was a novel sensation to most of us to see our English friends mount the tribune and deliver their sentiments in French; a still more novel sensation to those who for the first time ventured upon such an undertaking themselves. You first rise in your place and say, *Je demande la parole*, at the same time holding up your hand to catch the eye of the president. On his replying, *Vous avez la parole*, you walk from your place to the tribune, which is a raised platform in front of the audience, and there, with the eyes of the assembled *savans* of Europe fixed upon you, you must carry out your rash undertaking, with all your imperfections on your head. It is like the sensation of diving for the first time into deep water, where you must swim or drown.

In these international gatherings very wide deviations from the correct standards of grammar and pronunciation are indulgently tolerated, and the English have certainly not appeared to disadvantage as compared with the Germans; though it has been by no means a rare occurrence to see a speaker of either of these nations in sore straits for want of a word. There is one great advantage in conducting a Congress in a foreign tongue, and that is that the difficulty of the situation puts a wholesome check upon any tendency to verbiage on the part of a speaker; he is glad to express his meaning in the simplest manner that he can, and to desist as soon as his laborious task is accomplished; but this advantage is to some extent lost where, as on the present occasion, the language is the native tongue of half the members of the Congress. Some of the later sittings were decidedly dull and unprofitable, being mainly occupied with prolix dissertations of no general interest. The *Salle des Séances*, with its draped walls and high canvas roof, is very stifling to the voice, and much of what was said was insufficiently heard by the bulk of the audience.

The official reports of the proceedings were taken not by shorthand writers, but by young men skilled in science, who wrote abstracts of the speeches in longhand during their delivery; and it must be acknowledged that they did their work exceedingly well. The report thus taken of each meeting was printed and laid before the members at the next meeting, to be adopted before proceeding to any other business. It is called the *procès verbal*, and is treated like the minutes of an English meeting, but it is much fuller than our minutes usually are.

So much of these reports as relates to the discussions on units has been reprinted in the *Révue Scientifique*, No. 13. We have not observed reprints of any other discussions of the Congress.

The jury are now hard at work. They have divided themselves into six groups, which are subdivided into fourteen classes according to the first fourteen classes of the catalogue; and some of the more important of these classes have been still further subdivided; the total number of jurors being about 150, one-half of whom are French. By the help of this division of labour the official inspections of the exhibits have been, we believe, completed; but some days will be devoted to carrying out a series of experimental tests, which have already been commenced; and it is probable that some valuable data relative to electric lights and the machines which furnish their electricity will remain as one definite result of the present Exhibition.

In connection with these experiments a good story is told respecting resistance-coils. An eminent firm sent off several patterns of resistance-boxes to the Exhibition, but being out of one of their favourite types, they supplied its place by an empty box having exactly the outward appearance of the genuine article. As ill-luck would have it, the jury selected this particular box as being precisely what they wanted to assist them in their experiments, and asked for the loan of it. The representative on the spot, being ignorant of the sham, and appreciating the compliment paid to his house, lent the box with the utmost alacrity. The result can be better imagined than described. Application was then made to another eminent firm for a box which occupied a conspicuous position in their case of exhibits; and this also turned out to be a dummy, but the joke was not carried so far this time, as the representative in charge at once declared the fact.

(*To be continued.*)

NOTES

THE subscriptions received for the Rolleston Memorial Fund up to the present date amount to about 530*l*. It is hoped that this sum may shortly be considerably augmented, especially by subscriptions expected to be received from Oxford at the beginning of the present term. All promoters of the movement are requested to make its existence known to others likely to interest themselves in the matter. The treasurer is Mr. E. Chapman, of Frewen Hall, Oxford. A general meeting will shortly be held to determine finally the form which the memorial shall take.

SOON after the death of the late Prof. Rolleston, F.R.S., the delegates of the University Museum at Oxford, acting with the advice of Prof. W. H. Flower, F.R.S., requested Mr. Robertson and Mr. Hatchett Jackson of the Anatomical Department to set in order the collection of Crania in the Museum illustrating the various races of mankind. The compilation of the Catalogue has just been completed by Mr. Hatchett Jackson, and the specimens arranged in the cases by him and Mr. Robertson. The collation of the Catalogue and the numbering of the specimens will shortly be carried out by the latter gentleman. The method of arrangement is that adopted by Prof. Flower in the recently-issued Part I. of the Osteological Catalogue of Vertebrated Animals in the Museum of the Royal College of Surgeons. Students will consequently be enabled to compare with ease the Oxford collection with the collection in the Hunterian Museum. The numbers at Oxford range from 1 to 1053 approximately—a rather larger total than the corresponding section in Prof. Flower's Catalogue. The Oxford collection is peculiarly rich in English specimens of a date prior to the Conquest. There is a unique series of Crania from various Long Barrows; and from the Round Barrows of the Yorkshire Wolds, obtained by Canon Greenwell in his excavations and presented by him to the University, together with other specimens chiefly from cist burials of the late Bronze period. The Roman and Roman-British number 180; the Anglo-Saxon 96. The races of Ancient Egypt, of India with Ceylon, of New Zealand, the American Continent, and the various regions of Australia are well represented. There are five Tasmanian, seven Andamanese crania, and fine specimens of Zulus and Bushmen. There are besides large stores with which at present it has been found impossible to deal. And in the Catalogue as it stands are not included various skeletons and two sets of life-like casts—one set, replicas of those obtained in the voyage of the *Astrolabe* and presented many years ago to Dr. Acland, then Lee's Reader of Anatomy at Christ Church, by Prof. Milne-Edwards the elder; the other set, purchased in 1869, and representing various aboriginal tribes of Australia. It may be added that during the present Long Vacation, Miss Cracroft, niece of the late Lady Franklin, has presented to the Anatomical Department fourteen portraits of Tasmanian aborigines, authenticated with the names of the individuals, their ages, and the districts whence they came, and admirably executed in water colour by Boch.

AT a public meeting of the University College (London) Chemical and Physical Society, to be held on Friday, October 21, at 7 p.m., Prof. Alex. W. Williamson, Ph.D., LL.D., F.R.S., will deliver an address on "An Error in the Commonly-accepted Theory of Chemistry."

WE regret to learn from the *American Naturalist* of the death of Mr. Carlile P. Patterson, Superintendent of the U.S. Coast Survey. It is supposed that Mr. Julius E. Hilgard, for a long time second officer of the Survey, will be promoted to the vacant post.

MR. ETHERIDGE, F.G.S., is, we are informed, leaving the Geological Survey to be Assistant-Keeper of the Geological Department at the British Museum of Natural History, South Kensington.

THE meeting of the Iron and Steel Institute being held in London this week is probably the most interesting and important since the Institute was founded. Representatives of nearly every foreign Government are present, and the muster of foreign members is unusually large. Several of the papers are of great practical and even scientific interest, and are sure to attract much attention and give rise to discussion. On Tuesday visits were paid to Messrs. Siemens' works at Woolwich, and to the Victoria Docks, and in the evening the Lord Mayor entertained the Institute at dinner. Yesterday afternoon a visit was made to Woolwich Arsenal, and in the evening the annual dinner of the Institute was held at Willis's Rooms. To-day the Small-Arms Factory at Enfield is to be visited, and the Carriage Works of the Great Eastern Railway at Stratford, and in the evening a *conversazione* will be held at South Kensington Museum. To-morrow will be devoted to a visit to Newhaven and Brighton.

THE scientific lecturers this winter at the London Institution, Finsbury Circus, will be Mr. Grant Allen ("An English Weed"); Prof. H. E. Armstrong, F.R.S. ("The Economical Use of Coal-gas for Lighting and Heating"); Prof. W. E. Ayrton, F.R.S. ("The Storage of Power"); Prof. R. S. Ball, F.R.S. ("Comets"); Dr. Lionel S. Beale, F.R.S. ("A Living Particle"); Prof. R. Bentley ("Materials used for Paper"); Dr. James Geikie, F.R.S. ("The Ancient Glacier-systems of Europe"); Prof. J. W. Judd, F.R.S. ("Are there Coal-fields under London?"); Prof. E. Ray Lankester, F.R.S. ("Scorpions, Terrestrial and Marine"); Prof. O. J. Lodge ("Electricity *versus* Smoke"); Mr. John Perry ("Spinning-tops"); Dr. W. H. Stone ("Singing, Speaking, and Stammering"); Mr. James Sully ("The Causation and Phænomena of Dreams"); and the Rev. J. G. Wood ("The Horse's Hoof").

A LETTER was read at the recent Social Science meeting at Saratoga from Mr. Charles Darwin to Mrs. Emily Talbot, in response to her inquiries as to the investigation of the mental and bodily development of infants. He specifies points of inquiry which it seems to him possess some scientific interest. "Does the education of the parents, for instance, influence the mental powers of their children at any age, either at a very early or somewhat more advanced stage? This could perhaps be learned by schoolmasters or mistresses, if a large number of children were first classed according to age and their mental attainments, and afterwards in accordance with the education of their parents, as far as this could be discovered. As observation is one of the earliest faculties developed in young children, and as this power would probably be exercised in an equal degree by the children of educated and uneducated persons, it seems not impossible that any transmitted effect from education would be displayed only at a somewhat advanced age. It would be desirable to test statistically, in a similar manner, the truth of the often-repeated statement that coloured children at first learn as quickly as white children, but that they afterwards fall off in progress. If it could be proved that education acts not only on the individual, but by transmission on the race, this would be a great encouragement to all working on this all-important subject. It is well known that children sometimes exhibit at a very early age strong special tastes, for which no cause can be assigned, although occasionally they may be accounted for by reversion to the taste or occupation of some progenitor; and it would be interesting to learn how far such early tastes are persistent and influence the future career of the individual. In some instances such tastes die away without apparently leaving any after effect; but it would be desirable to know how far this is commonly the case, as we should then know whether it were important to direct, as far as this is possible, the early tastes of our children. It may be more beneficial that a child should follow energetically some pursuit, of however trifling a nature, and thus acquire perseverance, than that he should be turned from it, because of no future advantage to him. I will mention one other small point of inquiry in relation to very young children, which may possibly prove important with respect to the origin of language, but it could be investigated only by persons possessing an accurate musical ear: children, even before they can articulate, express some of their feelings and desires by noises uttered in different notes. For instance, they make an interrogative noise, and others of assent and dissent in different tones, and it would, I think, be worth while to ascertain whether there is any uniformity in different children in the pitch of their voices under various frames of mind."

IN a letter to the *Madras Mail* of September 8 on the use of gigantic sea-weed as a protective agent for shores, Capt. J. H. Taylor, the Master-Superintendent of Madras, gives the following interesting "sea-serpent" story:—"A notable incident connected with this sea-weed, is recalled to my recollection, by Dr. Furnell's letter. About fifteen years ago, while I was in my ship at anchor in Table Bay, an enormous monster, as it appeared, was seen drifting, or advancing itself round Green Point, into the Harbour. It was more than one hundred feet in length, and moved with an undulating snake-like motion. Its head was crowned with what appeared to be long hair, and the keen-sighted among the affrighted observers declared they could see its eyes and distinguish its features. The military were called out, and a brisk fire poured into it at a distance of about five hundred yards. It was hit several times, and portions of it knocked off. So serious were its evident injuries, that on its rounding the point it became quite still, and boats went off to examine it and complete its destruction. It was found to be a specimen of the sea-weed above mentioned, and its stillness after the grievous injuries inflicted was due to its having left the ground swell and entered the quiet waters of the Bay."

DR. B. W. RICHARDSON is about to continue the series of lectures delivered by him in the spring at the instance of the "Ladies' Sanitary Association," of Berners Street. The lectures are devoted generally to the subject of "Domestic Sanitation." In the forthcoming series, which will be commenced in the Lower Hall, Exeter Hall, on Saturday, the 22nd inst., the structure and functions of the nervous system, and the physical and mental training of the young, will occupy a prominent place.

THE Phylloxera Congress, to which we have already referred, was opened on Sunday at Bordeaux.

THE Rev. J. Hoskyns-Abrahall writes to the *Times* from Combe, near Woodstock, October 3:—"On October 1, about 8.42 p.m., when I was walking in a north-westerly direction, about three hundred yards north-west of Hanborough Station, which is three-quarters of a mile north-west of Oxford, the eastern sky was suddenly flooded with a light that vied with that of the moon, which shone more than half full in the west. Turning round, I beheld a magnificent meteor, of a pale yellow hue, descending with a slow motion, vertically. It seemed larger than Jupiter. When I first saw it it, had dropped about a third of the distance from the zenith to the horizon; after traversing another third of that space it burst without scattering any sparks."

THE Exhibition of the Photographic Society is now open at the rooms of the Old Water-Colour Society in Pall Mall.

A NEW form of compressed air locomotive engine, the invention of a Mr. Hardie, has been put to a practical, and, it is said, successful test in New York, on the Second Avenue elevated railroad. The compressed air is stored in four tubular tanks connected with each other by pipes so as virtually to form one large reservoir. It is said that a saving of 50 per cent. is effected on the cost of working a locomotive by the use of the new invention.

A TELEGRAM from Geneva last Thursday states that another large rift has opened in the Tschingel, a circumstance which indicates that the mountain is still in movement. The inhabitants of Elm, many of whom had returned, have been again warned to leave their houses.

WE have received a very interesting coloured picture of the moon, reproduced from a telescopic painting by Mr. Henry Harrison of New York. It is the first of a series, and represents the moon at the stage of the three days crescent. The picture is twenty-four inches square, with the moon eighteen inches in diameter, and the execution is excellent. It shows the earth-shine very distinctly on the surface in shadow. As to its accuracy, we notice from a letter by Prof. Harkness that it was tested at the United States Naval Observatory, and the result is stated to have been all that could be desired. This picture is to be followed up by five others representing the moon at various succeeding stages. The London agent for the picture is Mr. William Wesley.

THE June number of the *Journal* of the Straits Branch of the Royal Asiatic Society, published half-yearly (London : Trübner and Co.) contains several useful articles :—Some account of the mining districts of Lower Pérak, by J. Errington de la Croix; The Folklore of the Malays, by W. E. Maxwell; Notes on the Rainfall of Singapore, by J. J. L. Wheatley; Journal of a voyage through the Straits of Malacca on an expedition to the Molucca Islands, by Capt. Walter Caulfield Lennox ; a sketch of the career of James Richardson Logan, by J. Turnbull Thomas; and a memorandum on the various tribes inhabiting Penang and Province Wellesley, by J. R. Logan. A journal with such a programme deserves every encouragement, and we hope it will receive it.

THE Society for Promoting Christian Knowledge has issued a series of coloured zoological diagrams representing various typical specimens of animal life, from corals and anemones to mammals. They are accurately and nicely executed after Leutemann's Zoological Atlas for Schools. Why should we still have to go to Germany for such productions?

UNDER the title of "Anglo-Saxon Britain" Mr. Grant Allen has published (through the S.P.C.K.) an interesting little volume on the early history of England. He has taken pains to master all the results of recent research in archæology and ethnology, and therefore the book has a more scientific flavour than usual with such works. While adopting generally the views associated with the names of Freeman and Green, he shows independence of view, and treats his subject in an unusually unconventional manner. Either as a reading-book or as a text-book for the special period, it ought to be useful; it is certainly interesting.

IN "Miscellanies of Animal Life," by Elizabeth Spooner (S.P.C.K.), the authoress has brought together a number of interesting and instructive extracts from various good authorities as to the habits of animals, which ought to prove interesting to children.

THE double balloon ascent which we announced in our last number took place at La Villette gasworks on Wednesday last week, at the appointed time. The weather was splendid, and the two balloons were in view for some length of time ; but the noise produced by the crackling of the net and the swinging of the aërostat produced such an effect on the sculler that he desisted from his experiment, and contented himself after a few pulls with an ordinary ascent. The experiment will be tried shortly with more experienced aëronauts.

ON October 18 a great electrical experiment will be made at the Paris Opera to test the effect of electric light on theatrical representations. The principal feature will be the lighting of a large number of Brush lamps by a magneto-electric machine revolving in the Palais de l'Industrie.

THE Ashton-under-Lyne Linnæan Botanical Society held its annual meeting on Sunday, October 2. Its members belong almost exclusively to the artisan class, and they are doing very good work. Under the auspices of the Ashton Biological Society they have undertaken the preparation of a complete flora and fauna of the district. The annual report gives particulars of the winter meetings and summer rambles of the members. It is a remarkable and interesting fact that the science of botany has been steadily and successfully cultivated by the Lancashire artisans for a century, if not longer, and their meetings, which are numerous, are held upon the Sundays.

ALL our lady readers are familiar with the name of Pullar of Perth, whose practical application of science to dyeing seems to meet with general favour. The present representative of that firm, Mr. Robert Pullar, is evidently conscious of how much he owes to science, and has recently been endeavouring to make her some return. The name of the Perthshire Natural History Society is no doubt known to many of our readers; its present president is Dr. James Geikie. At a recent meeting of the Society Mr. Pullar handed over to the Society a handsome and commodious house for their use, with accommodation for a museum, &c., Mr. Pullar himself having been the principal subscriber to the fund. The building will be known as the Moncrieffe Memorial Museum, in memory of the late president of the Society, Sir Thomas Moncrieffe. We trust, under the favourable conditions in which it now finds itself, the Perthshire Natural History Society will do even better work than it has hitherto done, and that its museum will become a model of what a local museum ought to be.

MR. J. HARRIS STONE, M.A., will contribute to the November number of *Good Words* an article upon the Viking Ship which was recently discovered in Norway. The paper will be illustrated with woodcuts made from photographs taken by the author.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. Frank Smyth ; two Beautiful Parrakeets (*Psephotus pulcherrimus*), an Australian Quail (*Synæcus australis*), a Regent Bird (*Sericulus melinus*), three Modest Grass Finches (*Amadina modesta*) from Australia, two Banded Grass Finches (*Pœphila cincta*), two Bichenos Finches (*Estrelda bichenovii*) from Queensland, a Melodious Finch (*Phonipara canora*) from Cuba, a Blue-beaked Weaver Bird (*Spermospiza hæmatina*) from West Africa, a Black-headed Finch (*Munia malacca*) from India, two Ceylonese Hanging Parrakeets (*Loriculus asiaticus*) from Ceylon, presented by Mr. T. H. Bowyer Bower; two Dunlins (*Tringa cinclus*), a Ringed Plover (*Œgialitis hiaticula*), British, presented by Mr. Edmund A. S. Elliot, M.R.C.S. ; a Common Viper (*Vipera berus*, var.), British, presented by Mr. L. A. Sandford ; two Axolotls (*Siredon mexicanus*) from Mexico, presented by Dr. Heneage Gibbes, F.Z.S. ; a Leopard Tortoise (*Testudo pardalis*) from South Africa, a Radiated Tortoise (*Testudo radiata*) from Madagascar, three Bell's Cinixys (*Cinixys belliana*) from Angola, presented by Sir John Kirk, C.M.Z.S. ; a Hog Deer (*Cervus porcinus*), a Hybrid Mesopotamian Fallow

Deer (between *Cervus mesopotamicus* ♂, and *Cervus dama* ♀), a Hybrid Muntjac (between *Cervulus lacrymans* ♂, and *Cervulus muntjac* ♀), born in the Gardens.

GEOGRAPHICAL NOTES

THE U.S. steamer *Corwin*, which has been searching for the missing, and we fear lost, *Jeannette*, has succeeded in reaching Wrangel Land, which has been annexed to the United States. We learn that it is probable that an international effort will be made next year to find traces of the *Jeannette;* our own Government has been moved in the matter, and may very possibly fit out a vessel for the purpose.

THE French Geographical Society has received intelligence of the assassination of a young explorer, M. Henri Dufour, by a tribe of the Ovambos, now at war with the Portuguese. M. Dufour left Omoruru in company with some merchants in December last for the purpose of exploring the basin of the River Cumene, in Eastern Africa. On arriving at this river his companions deemed it expedient to abandon the enterprise, on which M. Dufour courageously resolved to continue his course alone. No tidings of him having reached Omoruru, an inquiry was instituted, which led to the discovery of his untimely end. M. Dufour's papers and effects have been found, but his body has not yet been recovered.

THE current number of the Geographical Society's *Proceedings* is chiefly remarkable for a very long instalment of the report of papers read at the Geographical Section of the British Association, including Sir J. Hooker's address, Sir R. Temple's paper on Asia, and Sir F. J. Evans' on maritime discovery. The paper of this month's number is one by Dr. Bell, of the Geological Survey of Canada, on the commercial importance of Hudson's Bay, with remarks on recent surveys and explorations, which is accompanied by a large and carefully drawn map of the region. The most important of the geographical notes are those respecting Mr. J. M. Schuver's journey in Africa and the proposition of the British Association that the Geographical Society should undertake a scientific expedition to Kilinnandjaro and Mount Kenia, with a subsidy of one hundred pounds. Another note records the presence of the first British traveller at Hami, but seemingly his name and plans are alike a mystery.

WITH reference to the recent census of India the *Pioneer* learns that the census returns show a grand total of population for all India of 252,000,000. Figures amounting to 218,000,000 can be compared with previous censuses, and show an increase of 6·2 per cent. But in some provinces apparent large increases may be due to the inaccuracy of previous enumerations. Provincial totals are—Bengal, 68,800,000; Assam, 4,800,000; Madras, 30,800,000; Bombay, 13,900,000; ditto Native States, 6,900,000; Sind, 2,400,000; North-West Provinces, 32,600,000; ditto Native States, 700,000; Oudh, 11,400,000; British Punjab, 18,700,000; Native ditto, 3,800,000; Central Provinces, 11,500,000; Berar, 2,600,000; British Burmah, 3,700,000; Mysore, 4,100,000; Rajpootana, 11,000,000; Central India, 9,200,000; Hyderabad, 9,100,000. The total makes males 123,000,000, females 118,000,000. The provincial increases per cent. as compared with previous censuses, are as follows:—Bengal, 10; Assam, 19; Sind, 10; North-West, 6; Oudh, 1; Punjab, 7; Central Provinces, 25; Berar, 20; Burmah, 35. The decreases are—Madras, 2·4 per cent.; Bombay, ·3; Mysore, 17.

A SOMEWHAT curious boat has been built and launched at Granton, N.B., for use by the Rev. T. J. Comber, of the Baptist expedition on the Congo. With a view to its being at once portable and durable, this boat has been made of canvas, coated with a mixture of lampblack and tar, and is stretched into shape by malacca canes, while the interior consists of three movable umbrella-shaped structures, which can be tightened at will; it has a partly-covered deck, and weighs only 60 lbs.; further, it can be easily taken to pieces, so as to be carried by two persons, and by a little arrangement will form a tent.

Petermann's Mittheilungen for October is filled up with two articles—one by Mr. W. H. Dall, on the hydrology of Behring Sea and neighbouring waters, and Hofrath A. Regel's account of his expedition to Turfan in 1879.

MESSRS. BLACKWOOD have issued a tenth edition of Page's "Introductory Text-Book of Physical Geography," revised and enlarged by Prof. Lapworth, of the Mason College, Birmingham.

CAPT. POPELIN, of the Belgian station at Karema, Lake Tanganyika, whose death was lately announced, appears to have died when on his way from Ujiji to the Mampara district, in Southern Uguha.

ON SOME APPLICATIONS OF ELECTRIC ENERGY TO HORTICULTURE AND AGRICULTURE[1]

ON the 1st of March, 1880, I communicated to the Royal Society a paper "On the Influence of Electric Light upon Vegetation, &c.," in which I arrived at the conclusion that electric light was capable of producing upon plants effects comparable to those of solar radiation; that chlorophyll was produced by it, and that bloom and fruit, rich in aroma and colour, could be developed by its aid. My experiments also went to prove that plants do not as a rule require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected (in winter time) to solar light during the day and to electric light during the night.

During the whole of last winter I continued my experiments on an enlarged scale, and it is my present purpose to give a short account of these experiments, and of some further applications of electric energy to farming operations (including the pumping of water, the sawing of timber, and chaff and root-cutting) at various distances, not exceeding half a mile from the source of power, giving useful employment during the daytime to the power-producing machinery, and thus reducing indirectly the cost of the light during the night-time.

The arrangement consists of a high-pressure steam-engine of 6 horse-power nominal, supplied by Messrs. Tangye Brothers, which gives motion to two dynamo-machines (Siemens D), connected separately to two electric lamps, each capable of emitting a light of about 5000 candle-power. One of these lamps was placed inside a glass house of 2318 cubic feet capacity, and the other was suspended at a height of 12 to 14 feet over some sunk greenhouses. The waste steam of the engine was condensed in a heater, whence the greenhouses take their circulating supply of hot water, thus saving the fuel that would otherwise be required to heat the stoves.

The experiments were commenced on October 23, 1880, and were continued till May 7, 1881. The general plan of operation consisted in lighting the electric lights, at first at 6 o'clock, and during the short days at 5 o'clock every evening except Sunday, continuing their action until dawn.

The outside light was protected by a clear glass lantern, whilst the light inside the house was left naked in the earlier experiments, one of my objects being to ascertain the relative effect of the light under these two conditions. The inside light was placed at one side over the entrance into the house, in front of a metallic reflector, to save the rays that would otherwise be lost to the plants within the house.

The house was planted in the first place with peas, French beans, wheat, barley, and oats, as well as with cauliflowers, strawberries, raspberries, peaches, tomatoes, vines, and a variety of flowering plants, including roses, rhododendrons, and azaleas. All these plants being of a comparatively hardy character, the temperature in this house was maintained as nearly as possible a 60° Fahr.

The early effects observed were anything but satisfactory While under the influence of the light suspended in the open ai over the sunk houses the beneficial effects due to the electric light, observed during the previous winter, repeated themselves, the plants in the house with the naked electric light soon manifested a withered appearance. Was this result the effect of the naked light, or was it the effect of the chemical products—nitrogenous compounds and carbonic acid—which are produced in the electric arc?

Proceeding on the first-named assumption, and with a view of softening the ray of the electric arc, small jets of steam were introduced into the house through tubes, drawing in atmospheric air with the steam, and producing the effect of clouds interposing themselves in an irregular fashion between the light and the plants. This treatment was decidedly beneficial to the plants, although care had to be taken not to increase the amount of moisture thus intro-

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[1] Paper read at the British Association by C. William Siemens, D.C.L. LL.D., F.R.S., M. Inst. C.E.